wherein the first, second, and third birefringent elements of the second interleaver have angular orientations selected from the group consisting of:

$90° - \varphi_1$ for the first birefringent element, $90° - \varphi_2$ for the second birefringent element, and $90° - \varphi_3$ for the third birefringent element; and

$90° + \varphi_1$ for the first birefringent element, $90° + \varphi_2$ for the second birefringent element, and $90° + \varphi_3$ for the third birefringent element.

REMARKS

This is a response to the Office Action mailed December 12, 2002. Original claims 1 - 17 have been canceled from the application, original claim 18 has been amended, and new claims 19 - 21 have been added. Claims 18 - 21 are therefore presently in the application.

In the Office Action, the Examiner objected to the drawings under 37 CRF 1.83(a), stating that the second interleaver and its arrangement with respect to polarizer 12 must be shown or the feature(s) canceled from the claims(s).

However, Applicant respectfully submits that an interleaver is shown generally in Figure 1 and that this showing applies to both the first interleaver and the second interleaver. No particular arrangement of the second interleaver with respect to polarizer 12 (other than phase delays and angular orientation, which do not lend themselves to drawings and which are adequately described in the specification and claims) is claimed. Therefore, Applicant believes that the drawings are in compliance with 37 CFR 1.83(a).

In the Office Action, the Examiner stated that Claim 15 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 15 has been rewritten in independent form including all of the limitations of the base claim and any intervening claims as new claim 19.

In the Office Action, the Examiner stated that 18 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 112, second paragraph. Claim 18 has been rewritten accordingly.

More particularly, the Examiner stated that in Claim 18 it is not clear that each of the recited angles corresponds in order to each of the recited first stage phase delays. Applicant has amended Claim 18 to recite "wherein the orientations of the birefringent elements of each stage correspond to the phase delays of the birefringent elements of the same stage in the order listed in the table." Applicant respectfully submits that this amendment makes it clear that for each stage, the recited angles correspond to each of the recited phase delays in the order listed in the table.

Additionally, the Examiner stated that since not all of the angular orientations are stated in ascending order, it is not clear in what order the phase delays are to be arranged. Applicant has further amended Claim 18 to recite "wherein a birefringent element of orientation $\pm\varphi_1$ or $90° \pm \varphi_1$ has phase delay Γ, wherein a birefringent element of orientation $\pm\varphi_2$ or $90° \pm \varphi_2$ has phase delay 2Γ, wherein a birefringent element of orientation $\pm\varphi_3$ or $90° \pm \varphi_3$ has phase delay 2Γ, and wherein the birefringent elements are arranged in the order listed in the table."

Applicant has elected to use the convention that φ_1 corresponds to that birefringent element which has a phase delay of Γ by definition and that φ_2 and φ_3 correspond to those birefringement elements which have phase delays of 2Γ by definition. Thus, in the table (where the birefringent elements are listed in the order in which they are physically arranged), they will not always be listed in ascending order.

Additionally, the Examiner stated that since there is no positive recitation of each of the stages as comprising three elements, it is not clear how many times each of the recited values may be used. Applicant has amended Claim 18 to positively recite "each interleaver defining a stage having three birefringent elements."

Additionally, the Examiner stated that since there is no clear designation of designs along the ordinate, it is not clear whether a value for each column may, at the same time, be selected from any row. Applicant has amended Claim 18 to recited that the selections are made "from a single row of the table."

New claim 20 is substantially similar to claim 18, except that new claim 20 explicitly recites the use of two birefringent element assemblies instead of three birefringent element assemblies. Detailed discussion on use of two birefringent element assemblies can be found in paragraphs [0111]-[0115] in the specification. In claim 20, the two element table is obtained from the three element table in claim 18 by ignoring the birefringent element of orientation $\pm\varphi_3$ or $90° \pm \varphi_3$ and phase delay 2Γ. Applicant respectfully submits that no new matter has been added. Applicant believes that new claim 20 is allowable for the same reasons that amended claim 18 is allowable.

Claim 12 was rejected under 35 U.S.C. 102(e) as being anticipated by Sharp, et al. However, it is respectfully submitted that Sharp does not disclose an interleaver, as explicitly recited in this claim. Rather, Sharp discloses a retarder. As those skilled in the art will appreciate, although a retarder and an interleaver may have some common structures, a retarder is not suitable for use as an interleaver. Moreover, a retarder is not suitable for receiving a single input and providing multiple outputs (as vice versa), as is an interleaver. More importantly, the retarder of Sharp completely lacks a polarization selection element disposed intermediate two stages of birefringent elements thereof.

New claim 21 is substantially original claim 12 rewritten to include the base claim and the intervening claims with the addition of a polarization selection element being recited. It is respectfully submitted that none of the cited prior art either discloses or makes obvious "a polarization selection element disposed intermediate the first interleaver and the second interleaver," as recited in new independent claim 21. It is respectfully submitted that new claim 21 is thus allowable.

The double patenting rejections are not being addressed at this time, since these rejections are provisional.

It is respectfully submitted that all of the claims are in condition for immediate allowance. Reconsideration and an early allowance is therefore respectfully requested.

Additionally, Applicant has noted errors in the Published Application that do not occur in the application as filed (and thus may be due to the scanning process). With reference to the Published Application, these errors are as follows:

In paragraph [0080], line 3 from paragraph end: " 900° " should be " 90° "

In paragraph [0102], line 6 from paragraph end: " $_3$ " should be "φ_3"

Please note that applicant's representative has a new address. Please address all correspondence to Myers, Dawes & Andras LLP, Attention: Norman Carte, 19900 MacArthur Blvd., Ste. 1150, Irvine, CA 92612. A Revocation of Power of Attorney and Substitute Power of Attorney are enclosed herewith.

Respectfully submitted,
Myers, Dawes & Andras LLP

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VERSION WITH MARKING TO SHOW CHANGES

In the Claims:

Claims 1 - 17 have been canceled.

Claim 18 has been amended as follows:

18. (amended) A method for forming a low dispersion interleaver assembly, the method comprising forming two interleavers, each interleaver defining a stage having three birefringent elements, configured such that light passes sequentially therethrough, each interleaver being formed by selecting first stage phase delays, first stage orientations, second stage phase delays and second stage orientations from a single row of the table:

First Stage Phase Delays	First Stage Orientations	Second Stage Phase Delays	Second Stage Orientations
Γ, 2Γ, 2Γ	φ_1, φ_2, φ_3	Γ, 2Γ, 2Γ	$90°\pm\varphi_1$, $90°\pm\varphi_2$, $90°\pm\varphi_3$ (parallel component) $90°\pm\varphi_1$, $90°\pm\varphi_2$, $90°\pm\varphi_3$ (orthogonal component)
2Γ, 2Γ, Γ	φ_3, φ_2, φ_1	2Γ, 2Γ, Γ	$90°\pm\varphi_3$, $90°\pm\varphi_2$, $90°\pm\varphi_1$ (parallel component) $90°\pm\varphi_3$, $90°\pm\varphi_2$, $90°\pm\varphi_1$ (orthogonal component)
Γ, 2Γ, 2Γ	φ_1, φ_2, φ_3	2Γ, 2Γ, Γ	$90°\pm\varphi_3$, $90°\pm\varphi_2$, $90°\pm\varphi_1$ (parallel component) $\pm\varphi_3$, $\pm\varphi_2$, $\pm\varphi_1$ (orthogonal component)
2Γ, 2Γ, Γ	φ_3, φ_2, φ_1	Γ, 2Γ, 2Γ	$90°\pm\varphi_1$, $90°\pm\varphi_2$, $90°\pm\varphi_3$ (parallel component) $\pm\varphi_1$, $\pm\varphi_2$, $\pm\varphi_3$ (orthogonal component)

wherein the orientations of the birefringent elements of each stage correspond to the phase delays of the birefringent elements of the same stage in the order listed in the table; and

wherein a birefringent element of orientation $\pm\varphi_1$ or $90°\pm\varphi_1$ has phase delay Γ, wherein a birefringent element of orientation $\pm\varphi_2$ or $90°\pm\varphi_2$ has phase delay 2Γ, wherein a birefringent element of

orientation $\pm\varphi_3$ or $90° \pm \varphi_3$ has phase delay 2Γ, and wherein the birefringent elements are arranged in the order listed in the table.

New claims 19 - 21 have been added, as follows:

19. (new) A low dispersion interleaver assembly comprising:

a first interleaver;

a second interleaver;

wherein the first interleaver is configured so as to provide a dispersion vs. wavelength curve wherein each dispersion value thereof is approximately opposite in value to a dispersion value at the same wavelength for the second interleaver, so as to mitigate dispersion in the interleaver assembly;

wherein the first interleaver and the second interleaver each comprise a plurality of birefringent elements;

wherein the phase delays of the birefringent elements of the first interleaver are in an opposite order from input to output with respect to the phase delays of the birefringent elements of the second interleaver;

wherein the first interleaver comprises first, second and third birefringent elements have phase delays selected from the group consisting of:

Γ for the first birefringent element, 2Γ for the second birefringent element, and 2Γ for the third birefringent element; and 2Γ for the first birefringent element, 2Γ for the second birefringent element and Γ for the third birefringent element;

wherein the second interleaver comprised first, second, and third birefringent elements have phase delays selected from the group consisting of:

2Γ for the first birefringent element, 2Γ for the second birefringent element, and Γ for the third birefringent element; and Γ for the first birefringent element, 2Γ for the second birefringent element and 2Γ for the third birefringent element;

wherein the first, second, and third birefringent elements of the first interleaver have angular orientations of $\varphi_1, \varphi_2, \varphi_3$, respectively;

wherein the first, second, and third birefringent elements of the second interleaver, for a component output from the first interleaver which is parallel to an input thereto, have angular orientations selected from the group consisting of:

$90° - \varphi_3$ for the first birefringent element, $90° - \varphi_2$ for the second birefringent element, and $90° - \varphi_1$ for the third birefringent element; and

$90° + \varphi_3$ for the first birefringent element, $90° + \varphi_2$ for the second birefringent element, and $90° + \varphi_1$ for the third birefringent element;

wherein the first, second, and third birefringent elements of the second interleaver, for a component output from the first interleaver which is orthogonal to an input thereto, have angular orientations selected from the group consisting of:

φ_3 for the first birefringent element, φ_2 for the second birefringent element and φ_1 for third birefringent element; and

$-\varphi_3$ for the first birefringent element, $-\varphi_2$ for the second birefringent element, and $-\varphi_1$ for third birefringent element.

20. (new) A method for forming a low dispersion interleaver assembly comprising two interleavers, each interleaver defining a stage having two birefringent elements, configured such that light passes sequentially therethrough, each interleaver being formed by selecting first stage phase delays, first stage orientations, second stage phase delays and second stage orientations from a single row of the table:

First Stage Phase Delays	First Stage Orientations	Second Stage Phase Delays	Second Stage Orientations
$\Gamma, 2\Gamma$	φ_1, φ_2	$\Gamma, 2\Gamma$	$90°\pm\varphi_1, 90°\pm\varphi_2$ (parallel component) $90°\pm\varphi_1, 90°\pm\varphi_2$ (orthogonal component)
$2\Gamma, \Gamma$	φ_2, φ_1	$2\Gamma, \Gamma$	$90°\pm\varphi_2, 90°\pm\varphi_1$ (parallel component) $90°\pm\varphi_2, 90°\pm\varphi_1$ (orthogonal component)
$\Gamma, 2\Gamma$	φ_1, φ_2	$2\Gamma, \Gamma$	$90°\pm\varphi_2, 90°\pm\varphi_1$ (parallel component) $\pm\varphi_2, \pm\varphi_1$ (orthogonal component)
$2\Gamma, \Gamma$	φ_2, φ_1	$\Gamma, 2\Gamma$	$90°\pm\varphi_1, 90°\pm\varphi_2$ (parallel component) $\pm\varphi_1, \pm\varphi_2$ (orthogonal component)

wherein the orientations of the elements of each stage correspond to the phase delays of the elements of the same stage in the order listed in the table; and

wherein a birefringent element of orientation $\pm\varphi_1$ or $90° \pm\varphi_1$ has phase delay Γ, wherein a birefringent element of orientation $\pm\varphi_2$ or $90° \pm\varphi_2$ has phase delay 2Γ, and wherein the birefringent elements are arranged in the order listed in the table.

21. (new) A low dispersion interleaver assembly comprising:

a first interleaver;

a second interleaver;

a polarization selection element disposed intermediate the first interleaver and the second interleaver;

wherein the first interleaver is configured so as to provide a dispersion vs. wavelength curve wherein each dispersion value thereof is approximately opposite in value to a dispersion value at the same wavelength for the second interleaver, so as to mitigate dispersion in the interleaver assembly;

wherein the first interleaver and the second interleaver each comprise a plurality of birefringent elements;

wherein the phase delays of the birefringent elements of the first interleaver are in the same order from input to output as the phase delays of the birefringent elements of the second interleaver;

wherein the first interleaver comprises first, second and third birefringent elements having phase delays selected from the group consisting of:

Γ for the first birefringent element, 2Γ, for the second birefringent element, and 2Γ for the third birefringent element; and 2Γ for the first birefringent element, 2Γ for the second birefringent element and Γ for the third birefringent element;

wherein the second interleaver comprises first, second, and third birefringent elements having phase delays selected from the group consisting of:

Γ for the first birefringent element, 2Γ for the second birefringent element, and 2Γ for the third birefringent element; and 2Γ for the first birefringent element, 2Γ for the second birefringent element and Γ for the third birefringent element;

wherein the first, second, and third birefringent elements of the first interleaver have angular orientations of φ_1, φ_2, φ_3, respectively;

wherein the first, second, and third birefringent elements of the second interleaver have angular orientations selected from the group consisting of:

90° - φ_1 for the first birefringent element, 90° - φ_2 for the second birefringent element, and 90° - φ_3 for the third birefringent element; and

90° + φ_1 for the first birefringent element, 90° + φ_2 for the second birefringent element, and 90° + φ_3 for the third birefringent element.